121, and depicted in the proposed amendments to Figs. 1A and 9A. Further, reference numerals associated with Figs. 8A-E, 10A-B, 11A-B have been corrected, and conforming amendments have been made to the specification to insert reference numerals where appropriate. No new matter has been added. A Request for Approval of Drawing Changes is filed herewith under separate cover.

No indication of approval or disapproval of the Request for Approval of Drawing Changes, filed 27 August 2001, has been given with the most recent office action. The changes proposed therein, responsive to the Examiner's requirements in the preceding Office Action, are incorporated into the presently filed Request.

In response to the Examiner's invitation, the specification has been carefully reviewed and several minor informalities have been noted and corrected by the above amendments. No new matter has been added.

In the most recent Office Action, Claims 26-31 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claim 29 is rejected under 35 U.S.C. § 101 as being a duplicate of Claim 31. Claims 26-31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being obvious over Claims 24-25 of co-pending U.S. Pat. Application No. 09/363,868. Claims 26-31 are also rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,852,485 to Shimida, et al. in view of U.S. Patent 6,023,317 to Xu et al., and U.S. Patent No. 5,889,571 to Kim, et al.

In response to the rejection of Claims 26-31 under 35 U.S.C. § 112, second paragraph, Applicants offer the above amendment. As amended, Claims 26 and 28-31 substitute the term – vertical orientation films– for "compensation films". This limitation finds support in the original specification as filed, among other places, in Figs. 9A-B, and the accompanying descriptions

beginning at page 28, line 25. No new matter has been added. This amendment is believed to ameliorate any potential for indefiniteness in the claims. Therefore, Applicants kindly request that the rejection under 35 U.S.C. § 112, second paragraph, be reconsidered and withdrawn.

In response to the rejection of Claim 29 under 35 U.S.C. § 101 as being a duplicate of Claim 31, Applicants offer the above amendment. As amended, Claim 31 depends from Claim 30, rather than Claim 28. Therefore, Applicants kindly request that the rejection under 35 U.S.C. § 101 be reconsidered and withdrawn.

In response to the provisional rejection of Claims 26-31 under the judicially created doctrine of obviousness-type double patenting over Claims 24-25 of co-pending U.S. Pat. Application No. 09/363,868, Applicants have filed an amendment in the co-pending application canceling Claims 24-25. The subject matter of these claims, finding support in the same specification of the instant divisional application, have been introduced as new Claims 42 and 43 of the instant application. No new matter has been added. Therefore, Applicants respectfully submit that the provisional obviousness-type double-patenting rejection has been obviated and kindly request that the rejection be reconsidered and withdrawn.

Additionally, Claim 23 of co-pending U.S. Pat. Application No. 09/363,868 has been cancelled, and the complete subject matter introduced as new Claim 44. Finally, the subject matter previously recited in the concluding paragraphs of Claims 26 and 27 has been re-introduced as new dependent Claims 40 and 41, respectively. No new matter has been introduced. Moreover, as these are broadening amendments, no surrender or disclaimer of subject matter relative to these limitations has been made, nor should be implied.

On the merits of the claims, as amended Claim 26 recites, *inter alia*, a method of manufacturing a liquid crystal display device comprising forming liquid crystal to be oriented

substantially vertically to the first substrate when no voltage is applied across the common electrode and the pixel electrode. Claim 26 further recites forming vertical orientation films on both surfaces of the liquid crystal layer. Claim 26 further recites disposing a common electrode and a pixel electrode in different layers through an interlayer separation film formed of transparent insulating material.

In contrast to the claimed invention, these steps are neither disclosed nor suggested by Shimida, Xu and Kim, taken alone or in any combination. As can be seen in Fig. 2 of Shimida, both the picture electrode (12) and the counter electrode (13) lie on the insulation layer (19), and both are covered by and alignment layer (116). However, there is no teaching or suggestion of an interlayer separation film as recited in Claim 26. Other embodiments of Shimida include alternate arrangements of the common and picture electrodes, but none meet the language of the instant invention. Further, Shimid specifically teaches that the liquid crystal molecules are make an angle of less than 90° when no voltage is applied (See Col. 14, lines 15-19). This teaches away from the claimed invention, which recites that the liquid crystals are oriented substantially vertically when no voltage is applied.

Xu is offered for its teaching of the use of positive and negative retardation films for improving display contrast. Kim is offered to teach the forming of a pre-tilt angle on an LCD device. However, neither modifying reference offers any teaching or suggestion to reconcile the deficiencies of Shimida relative to Claim 26 as highlighted above. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Further, to establish *prima facie* obviousness there must be some suggestion or motivation to modify the reference. *See, In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453,

1457 (Fed. Cir. 1998). The Office Action improperly relies solely on the skill of the ordinarily skilled artisan to provide such suggestion or motivation (p. 5, second para.). "Rarely, however, will the skill in the art component operate to supply missing knowledge or prior art to reach an obviousness judgment." *Al-Site Corp. v. VSI International Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999). Lacking a suggestion or motivation to modify Shimida in the manner alleged in the Office Action, Applicants respectfully submit that a *prima facie* showing of obviousness has not been made. Therefore, Applicants respectfully submit that Claim 26 is patentable over the prior art, and kindly request the rejections be reconsidered and withdrawn.

The foregoing remarks and amendments are believed to establish the patentability of independent Claims 26. Dependent claims not specifically addressed are submitted as patentable for at least the same reasons as the claims from which they depend. Therefore, Applicants respectfully submit that all claims define patentable subject matter, and kindly solicit an early indication of allowability.

Respectfully Submitted,

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VERSION WITH MARKING TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please replace the following paragraph beginning at page 5, line 8, with the following rewritten paragraph:

Here, when a voltage is applied to the gate electrode 1202 to switch on the thin film transistor (TFT), a voltage is applied to the source electrode 1207 to induce electric field between the source electrode 1207 and the common electrode [503] 1203 disposed so as to confront the source electrode 1207. The liquid crystal molecules 1241a are orientationally turned to liquid crystal molecules 1241b. The liquid crystal molecules 1241b are kept to be substantially parallel to the direction of the electric field generated between the source electrode 1207 and the common electrode 1203 disposed so as to confront the source electrode 1207.

Please replace the following paragraph beginning at page 11, line 24, with the following rewritten paragraph:

Figs. 4A and 4B are cross-sectional view and plan view showing a liquid crystal display according to a second mode of the present invention; [and]

Please replace the following paragraph beginning at page 12, line 2, with the following rewritten paragraph:

Figs. [6a] 6A to 6E are cross-sectional view showing a method of manufacturing a liquid crystal display device according to the third mode;

Please replace the following paragraph beginning at page 23, line 19, with the following rewritten paragraph:

The liquid crystal display device of the third mode is the 20 same as the first mode in that a gate electrode 505 is formed on a glass substrate 501, a thin film transistor comprising a drain electrode 506 and a source electrode 507 is formed through a gate insulating film 504, and a passivation film 512 is formed on the thin film transistor. Further, a color filter layer 517 is formed on the passivation film 512, and a first overcoat layer 513 is formed so as to cover the color filter layer [513] 517. The overcoat layer 513 is formed of a transparent insulating film which is hard to be charged up.

Please replace the following paragraph beginning at page 24, line 21, with the following rewritten paragraph:

The third mode is similar to the first mode in that the orientation films are formed on the surface of the active matrix substrate on which the unit pixels designed as described above are disposed in a matrix arrangement and on the surface of the counter substrate, both the substrates are subjected to rubbing treatment in a predetermined direction and the liquid crystal is driven by using laterally-directing electric field occurring between the pixel electrode 508 and the common electrode 509 disposed on the active matrix substrate to thereby vary the light transmissivity. The liquid crystal layer 515 is sandwiched between the counter substrate 516 and the second overcoat layer 514.

Please replace the following paragraph beginning at page 25, line 7, with the following rewritten paragraph:

As in the case of the first mode, as shown in Fig. 6A, a thin film transistor is formed on the glass substrate, the passivation film 512 for protecting the thin film transistor and the glass substrate 501 is deposited. and then a color filter layer 517 is formed by using pigment-dispersed type photosensitive acrylic resin or the like.

Please replace the following paragraph beginning at page 25, line 12, with the following rewritten paragraph:

Subsequently, as shown in Fig. 6B, the first overcoat layer 513 is formed by using transparent photosensitive acrylic resin or the like, a through hole 518 is formed in the first overcoat layer 513 and at the same time a through hole is formed on the passivation film 512.

Please replace the following paragraph beginning at page 25, line 17, with the following rewritten paragraph:

Subsequently, as shown in Fig. 6C, the pixel electrode 508 to be connected to the source electrode [508] 507 through the through hole 518 is formed on the first overcoat layer 513 by using ITO or the like.

Please replace the following paragraph beginning at page 25, line 20, with the following rewritten paragraph:

Subsequently, as shown in Fig. 6D, the second overcoat layer 514 is formed. When the second overcoat layer 514 [film] is formed of a photosensitive organic film by using a coating method or the like, the through hole [508] 518 is flattened, and both of the pixel electrode 508 and the common electrode 509 can be prevented from being short-circuited to each other.

Therefore, this method is preferable.

Please replace the following paragraph beginning at page 25, line 28, with the following rewritten paragraph:

As described above, according to the third mode, electric field is prevented from being applied to the liquid crystal layer 515 from the upper and lower sides at all times, and thus the device of the third mode has such a structure that the display deterioration hardly occurs unlike the prior art. Further, since the through hole on the first overcoat layer 513 is flattened by the second overcoat layer 514 the short-circuit between the pixel electrode 508 and the common electrode 509 can be prevented.

Please replace the following paragraph beginning at page 27, line 7, with the following rewritten paragraph:

Accordingly, in the fourth mode, the common electrode 709 is disposed on the first overcoat 713 on the color filter 717, and the pixel electrode 708 is disposed on the second overcoat layer 714 formed so as to cover the first overcoat 713 and the common electrode 709. The area sandwiched between the pixel electrode 709 and the common electrode 709 forms one pixel. The common electrode 709 is disposed on the wire and TFT, and it serves as a light shielding member as in the case of the second mode.

Please replace the following paragraph beginning at page 28, line 1, with the following rewritten paragraph:

As in the case of the first mode, as shown in Fig. 8A, a thin film transistor

is formed on the glass substrate 710, the passivation film 712 for protecting the thin film transistor and the glass substrate is deposited, and then a color filter layer 717 is formed by using pigment-dispersed type photosensitive acrylic resin or the like.

Please replace the following paragraph beginning at page 28, line 6, with the following rewritten paragraph:

Subsequently, as shown in Fig. 8B, after the first overcoat layer 713 is coated, the common electrode 709 is patterned by using metal such as chromium/molybdenum or the like.

Please replace the following paragraph beginning at page 28, line 9, with the following rewritten paragraph:

Subsequently, as shown in Fig. [8c] 8C, after the second overcoat [film] layer 714 is coated, the through hole penetrating trough the first and second [overcoat films] layers 713, 714 and the passivation films 712 is formed.

Please replace the following paragraph beginning at page 28, line 12, with the following rewritten paragraph:

Finally, as shown in Fig. 8D, the pixel electrode [908] 708 to be connected to the source electrode 707 through the through hole 718 is formed on the second overcoat layer 714 by using ITO or the like.

Please replace the following paragraph beginning at page 40, line 2, with the following rewritten paragraph:

Thereafter, nematic liquid crystal having positive permittivity anisotropy was injected into the gap between the substrates, and the injection hole was sealed by photocurable resin. An optically negative compensation film 121 whose Δnd is equal in absolute value, however, opposite in sign to And of the liquid crystal layer was attached, and then polarizing plates were attached to the upper and lower substrates so that the transmission axes thereof were perpendicular to each other. An optically positive compensation film may be used in place of the optically negative compensation film.

Please replace the following paragraph beginning at page 41, line 16, with the following rewritten paragraph:

Thereafter, nematic liquid crystal having positive permittivity anisotropy was injected into the gap between the substrates, and the injection hole was sealed by photocurable resin. An optically negative compensation film 121 whose Δnd is equal in absolute value, however, opposite in sign to Δnd of the liquid crystal layer was attached. and then polarizing plates were attached to the upper and lower substrates so that the transmission axes thereof were perpendicular to each other. An optically positive compensation film may be used in place of the optically negative compensation film.

IN THE CLAIMS:

Please cancel claim 27without prejudice or disclaimer:

Please amend claims 26, and 28-31:

26. (Amended) A method of manufacturing a liquid crystal display device comprising a first

substrate, a second transparent second substrate, and a liquid crystal layer and a color filter layer sandwiched between said first and second substrates, comprising the steps of:

forming said color filter layer on said first substrate;

forming said liquid crystal layer between said color filter and said second substrate;

forming, [on] between said first substrate [below] and said color filter layer,

plural scan signal electrodes, plural video signal electrodes crossing said scan signal electrodes in a matrix form, and plural thin film transistors in association with the crossing points between said scan signal electrodes and said video signal electrodes;

forming at least one pixel in each of areas surrounded by said plural scan signal electrodes and said plural video signal electrodes;

forming, in each pixel, a common electrode which is connected over plural pixels through a common electrode wire to supply reference potential, and a pixel electrode which is connected to the corresponding thin film transistor and disposed so as to confront said common electrode in said pixel area;

disposing said common electrode and said pixel electrode between said color filter layer and said liquid crystal layer, and disposing said common electrode and said pixel electrode in different layers through an interlayer separation film formed of transparent insulating material;

forming liquid crystal so as to be oriented substantially vertically to said first substrate when no voltage is applied across said common electrode and said pixel electrode; and

forming vertical orientation films on both surface of said liquid crystal layer

[forming an optically negative compensation film and an optically positive compensation film between said first or second substrate and a polarizing plate, and forming, by light irradiation, pretilt angles in two directions in which liquid crystal molecules are felled when a voltage is applied to said compensation films].

28. (Amended) The method as claimed in claim [26] 40, wherein the light irradiation to forming the pretilt angles is conducted on the surfaces of said [compensation films] vertical orientation films from a slant direction.

29. (Amended) The method as claimed in claim 28, wherein the light irradiation for forming the pretilt angles is conducted by irradiating polarized light the surfaces of said [compensation films] vertical orientation films from a slant direction.

30. (Amended) The method as claimed in claim [27] 41 wherein the light irradiation for forming the pretilt angle is conducted on the surfaces of said [compensation films] vertical orientation films from a slant direction.

31. (Amended) The method as claimed in claim [28] 30, wherein the light irradiation for forming the pretilt angles is conducted by irradiating polarized light on the surfaces of said [compensation films] vertical orientation films from a slant direction.

Please add new claims 40-44:

40. (New) The method as claimed in claim 26, further comprising the steps of forming an

optically negative compensation film and an optically positive compensation film between said first or second substrate and a polarizing plate, and forming, by light irradiation, pretilt angles in two directions in which liquid crystal molecules are felled when a voltage is applied to said vertical orientation films.

41. (New) The method as claimed in claim 26, further comprising the steps of forming an optically negative compensation film and an optically positive compensation film between said first or second substrate and a polarizing plate, and forming, by light irradiation, a pretilt angle in any one of directions in which liquid crystal molecules are felled when a voltage is applied to said vertical orientation films.

42. (New) The method as claimed in claim 26, further comprising the step of forming an optically negative compensation film and an optically positive compensation film between said first or second substrate and a polarizing plate, and forming, by a rubbing method, pretilt angles along two directions in which liquid crystal molecules are felled when a voltage is applied to said vertical orientation films.

43. (New) The method as claimed in claim 26, further comprising the step of forming an optically negative compensation film and an optically positive compensation film between said first or second substrate and a polarizing plate, and forming, by a rubbing method, a pretilt angle in any one of directions in which liquid crystal molecules are felled when a voltage is applied to said vertical compensation films.

44. (New) The method as claimed in claim 26, further comprising the step of adding an organic material comprising monomers or olygomers into said liquid crystal, injecting said liquid crystal into the gap between said first substrate and said second substrate, and then polymerizing said organic material in said liquid crystal.